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Editorial

THE HUMANE SLAUGHTERING OF ANIMALS.

THE subject of the use of the best possible humane means in the carrying out of the necessary methods of destruction of animals, whose flesh is required for food purposes, is one which especially interests the veterinary surgeon ; and the recently published Report * issued by the Sanitary Committee of the Public Health Department of the City of London is a very valuable contribution to the question. It is a joint Report undertaken by Dr. W. J. Howarth, C.B.E., the Medical Officer of Health for the City of London, and the two veterinary officials, Lieut.-Colonel Dunlop Young, O.B.E., F.R.C.V.S., D.V.S.M. (Chief Veterinary Inspector at the Central Meat Market), and Captain J. R. Hayhurst, M.R.C.V.S. (the Superintendent of the Metropolitan Cattle Market).

As a result, at a meeting of the Common Council held in the Guildhall on the 2nd of April, with the Lord Mayor in the chair, a resolution was passed " that the time is now opportune for definite regulations to be framed to control and regulate the slaughtering of animals for human consumption ; that any additional powers in this direction should be of general application throughout the country, and that in order to secure uniformity such regulations should be issued as compulsory regulations by the Ministry of Health."

This conclusion, arrived at after very careful deliberation by such an important Council as that of the City of London, and advocating the word " must " instead of the optional word " shall," is a most important one, and likely to carry a good deal of weight by the example it will set to other City Councils when considering regulations for the humane slaughtering of animals.

The Committee have, in their Report, entered thoroughly into every aspect of the question, and in regard to considerations affecting the method of slaughtering the following interesting observations appear :

1. It must be obvious that in the act of slaughter an animal must undergo some physical pain. By some methods unconsciousness is so suddenly produced that it can be regarded as negligible, in others some doubt exists as to the duration of pain. The mental aspect of slaughter would appear to be generally exaggerated, for the symptoms of fear which an animal shows at the time of slaughter are probably not associated with the slaughterhouse as such, but rather with the unusual association of animal with man in an enclosed space. The

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ordinary instinct of self-preservation affects the animals rather than the fear of the unknown slaughtering process. Nevertheless, even this mental disturbance should be minimised, if possible, as well as the amount of physical pain inflicted on the animal.

2. As regards time. It is easy to recognise that if a proposed method of slaughter results either in requiring more men to carry it out as a consequence of additional labour being thrown on to the slaughterman, or if it necessitates an appreciably lengthened time in which to slaughter and dress an animal, that such a process will not be received with favour, and it would require to be proved that the advantages to the animal by the adoption of such process were such as to justify it, notwithstanding the resulting loss to the trader.

3. As regards damage to edible portions, this arises in respect of the brain in calves, the skin over the face in pigs, and the condition known as " splashing " in the same animals.

The reliability and effectiveness of the present instruments used to cause death is fully discussed, the mechanical killer taking precedence every time, and that which works with a mechanically propelled bolt being considered the best. The Temple Cox apparatus and the Cort pistol are the ones most favoured, both giving most excellent results. The Report given upon the keeping qualities of the meat showed that the meat of animals killed by the mechanical killer had equally good " keeping " qualities as any other and the damage to the carcass was negligible.

The Committee have recommended that the Bye-Law (9) (B) should be adopted by the Corporation and applied to Cattle, including Calves, Horses, Pigs (if to be consumed as fresh food), but not to be applied to Sheep. The Report says :

4. If Bye-law 9 (B) is adopted, we recommend that the use of a mechanically operated instrument of *the captive-bolt type be specified*, to the exclusion of one releasing a bullet.

5. If Bye-law 9 (B) is made compulsory, we consider that classes of instruction should be established for the purpose of educating slaughtermen in (*a*) simple anatomy of the skull of different animals, and (*b*) in the proper use and care of the instrument.

6. If it be practicable, after Bye-law 9 (B) is adopted, we would suggest that no persons should be permitted to slaughter in any slaughterhouse within the jurisdiction of the City Corporation until certified by one of your officials as having a competent knowledge of (*a*) and (*b*) above.

The last paragraph is of vital importance and embodies a course of instruction which we have consistently advocated in the columns of the *Journal* on several occasions ; for no living animal should be practised upon by amateurs, and the killer should be as expert as a course of instruction can make him be.

General Articles

VETERINARY PRACTICE IN SWITZERLAND.*

By C. M. HARING, D.V.M.

I HAD the opportunity, when in Switzerland, of having a day in country practice with Dr. F. Gruter, who has done some experimenting in testicle and ovary transplantation as a cure for bovine sterility. Meeting at Willishaw, about 100 miles from Zurich, breakfast was served at Gruter's bachelor quarters. Numerous bells of all sizes and tones were heard in the street, and Gruter explained that the deep-toned bells were on the cattle being led to a small live stock show being held that day, and the other bells were on the cattle being driven to the village fountains for their morning drink. Returning from the cattle show we stopped at a small slaughterhouse near the city gate while Gruter inspected the morning kill. No farmer, butcher, or other person or firm can sell meat that has not come from an animal inspected at the time of slaughter by a veterinarian; or, in areas where no veterinarian is available, by a specially instructed lay inspector. The law includes calves killed on the farm. The owner pays a fee of 10 cents a mile (one way) plus 1 dollar for each cow or horse inspected and 40 cents for each smaller animal. Poultry, dogs, and cats are not included, although the veterinarian may sometimes be called upon to express an opinion gratis. During the war the practice of eating dogs and cats developed, and still exists to some extent. In slaughterhouses large enough to employ full-time inspectors the salary starts at 9,000 francs and rises to 10,500 francs. Every licensed veterinarian is ex-officio meat inspector for the area in which he practises, and when there is more than one veterinarian in a village the area is divided between them. One of the chief duties is prognosis, for which the practitioner receives a special fee, since it is customary to slaughter for food all sick cases having an unfavourable prognosis, and then decide from the lesions whether the carcass is fit for food. In cases of doubt specimens may be sent to a laboratory for bacteriological examination and the meat withheld from sale pending a report. Bacteriological meat inspection is a feature of the Pathological Institute at Zurich. Gruter had a case of sterility in a valuable heifer, so after inspection he selected the ovaries of an eighteen-months' non-pregnant heifer that had just been killed. The left ovary contained a corpus luteum, indicating that the animal was in about the ninth day of diestrum. The yellow body was removed by pressure and the two ovaries cut

* *North American Veterinarian*, March 1925.

in half and placed in a sterile glass container. On arrival at the farm I saw that the animal to be operated on was a large Simenthal heifer, two and a half years old. She was not a twin nor a free-martin, but the owner said she had never been in heat. On examination *per rectum* the uterus was small and long and the ovaries the size of peas. Gruter dry-shaved an area on the animal's neck about 4 inches square and painted the skin with Tr. of iodine. He then made a 3-inch incision perpendicular to the long axis of the body and dissected out a piece of muscle the size of the ovary. In its place he put one-half of one of the ovaries. He closed the pocket in the muscle with three interrupted sutures of gut inserted through the superficial fascia of the muscles of that region. The skin wound was closed with a continuous suture of tape. The sutures in both cases were made by drawing the thread through the tissues by means of a hook needle. A similar operation was performed on the other side of the neck. Ovary transplantation is a matter of frequent practice in Switzerland, and is preferred to the injection of ovarian extractives or substance. The indications and contra-indications are as follows. Animals sterile as a result of metritis, stenosis of cervix, salpingitis, etc., are not suitable, and it has no result on cystic ovaries. In cases of ovarian activity where the genitalia are otherwise normal the operation is indicated. Especially is this true of senile atrophy, and the opposite condition, viz. infantilism.

At another farm Gruter removed cystic ovaries *per vaginam*, the object being to increase profitable milk flow for another year.

A bull, on which testicle transplantation had been performed in much the same manner as previously described for ovarian transplantation, was visited. The bull had arrived at one and a half years old without having shown any sexual interest in cows at œstrum. Six weeks after the operation he became sexually normal. Testicles are easily obtained in Switzerland as calves are not castrated. A motion picture film of this and other cases *before* and *after* operation was given at the meeting of the Swiss Society of Natural Sciences at Lucerne. It showed the indifference in the presence of a cow in heat and then two months later the same animals during vigorous copulation. Gruter has had great success in his treatment of infectious streptococcic mammitis. He uses uberosan, a proprietary drug which is administered in the jugular and is supposed to have a chemotactic affinity for affected udder tissue. Dr. Schnorf of Zurich has been experimenting on this chemotaxis, and has gone to Budapest to study it under Professor Marek. The interesting article, which is illustrated, concludes with a few notes on the dog as a beast of burden.

TUBERCULOSIS IN THE DOG AND CAT.

By HENRY GRAY, M.R.C.V.S.,
London.

TUBERCULOSIS is far from rare in the dog and cat, but it is much more frequent in the latter than in the former animal.

The dog may be attacked at any age, and I have seen puppies at five weeks old die naturally of generalised tuberculosis. This particular instance was confirmed by Sir John McFadyen at the Royal Veterinary College. In such young animals they were suckling their dam and never had had any artificial food. So it comes to this: Was the dam affected with the disease or had she partaken of tuberculous food, the bacilli from which had traversed her system and were passed with her milk to the offspring? As the bitch appeared in normal health, resisted the tuberculin test, and no post-mortem could be made on her, one cannot say with certainty she was affected with the malady.

Most, if not all, cases of tuberculosis in the canine species are without doubt of human origin; at least, most of the cases I have encountered had been in association with tuberculous people or belonged to publicans, and had the run of the bar in which spittoons are often found or where spitting on the floor by patrons is often observed.

Certain medical authorities, without any experience of canine pathology, consider that the dog is not susceptible to tuberculosis, basing this belief on the fact that some experimenters failed to transmit the disease to them by inoculation. Probably young, healthy dogs leading a free life and fed solely on raw flesh are rather more resistant to the experimental mode of transmission, as has been shown by Richet of the Faculty of Medicine, Paris. Professor Richet has, in consequence, recommended a raw meat diet as a preventive against phthisis in man. But to assert from this experimental data that dogs are not susceptible under the ordinary conditions of which most of them subsist in towns is quite erroneous, as has been pointed out by Jensen of Copenhagen, Cadiot of Alfort, Eberlein of Berlin, and equally eminent authorities in other large cities.

The most marked form in which dogs are affected is generalised tuberculosis, in which most (if not all) of the internal organs are involved. *Phthisis pulmonalis* is not rare, and the majority of pleural and abdominal effusions are set up by Koch's bacillus. Pleural and pericardial adhesions, cystic enlargements of the mediastinal gland, and enlargements of the cervical and other glands, inveterate ulcerations

of the skin, and chorioiditis, are not infrequently observed. In large dogs, such as the Great Dane, St. Bernard, Deerhound, Irish Wolfhound and Newfoundland, the joints are frequently involved. Beyond an enlargement of the ends of the long bones, especially of the radio-ulnar extremity entering into the formation of the radio-carpal joint; and of the femur and tibia forming the stifle-joint, there are often osteophytic asperities. These are often accompanied by a chronic broncho-pneumonia and bronchiectasia, also due to the *Bacillus tuberculosis*. In other cases there may be a chronic diffuse osteo-periostitis, which not only attacks the extremities, but also the shafts, of the long bones. Even in small dogs like fox-terriers, Irish terriers, and spaniels the joints like the radio-carpal, coxo-femoral and tibio-femoral are attacked at the same time as the cervical and other glands, or with a chronic ulceration of the skin having sinuous openings in the region of throat and under surface of neck. Such cases of arthritis are often attributed to sprain, rheumatism, or to some injury without any evidence. There is not always acute pain, but when there is, the limb is carried, the soft tissues in the region of the joint waste away (making the joints appear very prominent), and there is some degree of general emaciation.

In many lesions, such as those affecting the mediastinal glands and the bones, tubercle bacilli are difficult to find, but inoculation with a portion of the diseased tissue usually transmits the affection, or the animal reacts to tuberculin. It should be mentioned that a paucity of tubercle bacilli in lesions is characteristic of the disease in the dog.

Many dogs showing isolated lesions remain in apparent good general health without any wasting. On the contrary, when there are generalised lesions there is gradual emaciation, a cough, anæmic mucous membranes, disturbed or disordered respiration when the animal is made to exert himself, wasting over the temporal region with prominence of the sagittal crest, sharp or prominent spine due to wasting of the spinal muscles and fat, and a pendulous or distended abdomen. There may be diarrhœa with or without blood, but there is rarely that general depressed appearance as is noticed in advanced distemper.

In some dogs the testicles may become enlarged, ill-shapen, or after a time undergo atrophy. In others there may be a tuberculous iritis with ultimate disorganisation of the internal structures of the eyeball. Usually both eyes are affected. Optic neuritis may supervene after the removal of an affected testicle, when the dog may gradually become blind in both eyes.

When the cranial meninges become involved with tuberculous granulations resembling those seen in *perlsucht* in bovines, there may

be torti-collis, the head being so twisted on the neck that one eye is towards the ground and the other looking up. The lowermost eye has usually a contracted pupil which is accompanied by an internal squint. This has often been diagnosed during life as dislocation of the neck; but it has in some cases reacted to tuberculin, and on post-mortem examination pronounced tuberculous lesions have been discovered on the cerebral face of the serous meninges.

Frequently where there are enlarged glands in the pharyngeal or maxillary regions miliary tubercles have been discovered in the lungs. Some such cases have been accompanied with femoro-tibial arthritis and ulceration of the skin under the neck.

In some cases of apparent chronic bronchitis, but which were in reality chronic tuberculous broncho-pneumonia, warty-like granulations have been discovered on the mucous membrane of the epiglottis, larynx, or upper part of trachea.

Many cases of chronic cerebral or spinal disease in adult or aged dogs arising from no appreciable cause, and in no way connected with distemper, have been found to be due to tuberculous lesions attacking the membranes. Even some cases of cerebral hæmorrhage have arisen from breaking down of a tuberculous lesion on the surface of the cerebrum or cerebellum. The symptoms of such have attracted attention to the animal when manifestations of lesions in other parts of the body have come under skilled observation.

In a litter of young suckling pups one or two may show generalised tuberculosis with enlargement of most of the internal lymphatic glands, whilst others show numerous miliary granulations in the lungs. If the pups do not die, but are allowed to live until they are three or four months old and then destroyed, miliary tubercles are often discovered to be undergoing cretification.

There is no part of the dog's system that has not been attacked by the *Bacillus tuberculosis*. Cadiot speaks of an acute septicæmic form of tuberculosis in the dog, but unless every dog showing lesions of an acute septicæmia is examined microscopically this form is most likely to be nearly, if not always, overlooked as belonging to tuberculosis.

As to the *cat*. Although generalised tuberculosis is not uncommon, it is not so frequently encountered as mesenteric tuberculosis or tabes mesenterica, which is always due to the ingestion of tuberculous milk. Sometimes these glands gain an enormous size—as large as a tangerine orange or a cricket ball, when there is always extreme emaciation and death; or rather the emaciation becomes so well marked that the owner seeks advice, when the cause is dis-

covered and destruction advised. Sometimes there is a tuberculous ulceration on the mucous surface of intestine with a hard knotted lacteal vessel connected with the tuberculous mesenteric gland. This may occur in kittens as well as in adult and aged cats.

Not infrequently one of the first symptoms to attract the attention of the owner to the cat is blindness, with both pupils dilated. This causes the owner to seek veterinary advice, when tuberculous chorioiditis is discovered. This may be accompanied by tuberculous disease of the kidney, which may give an enlarged and a roughened or even surface to the touch of the manipulator. Or the mesenteric glands may be found enlarged. If the animal is allowed to live, there may be detachment of the retina (infundibuliform detachment), iritis with adhesion to the lens, effusion into the anterior chamber, keratitis, chemosis or buthalmos, with subsequent disorganisation of the whole eyeball. Even should the eye clear up and no cataractous lens remains, there would very likely be left behind luxation of the lens, hydrophthalnos, and absence of tapetum and of choriodial vessels, or only remains of them may be present. Not infrequently there is a clearing up of the eye with relapses or recurrences of the trouble. One thing is certain, there is no cure for this blindness, which is the commonest disease of the cat's eye.

On making post-mortem examinations of cats killed on account of this blindness lesions may be found in various visceral organs, and especially the kidneys, which may alone be affected in addition to the eye. In some cases the general system seems clear, lesions only being discovered in the eyeball.

We may see the disease attack the cat in exactly the same way as the dog. Pulmonary phthisis, with wasting of one lung so that its remains may be no larger than a walnut or even a filbert, and quite functionless, is occasionally observed. This unilateral phthisis is usually accompanied by pleuritic effusion of a clear serous nature. Tuberculous pneumonia attacking both lungs is sometimes seen without any lesions in other organs. It may, however, be accompanied by chronic ulceration of the skin in the region of the throat or lower down on the under surface of the neck. Pleuritic, pericardial, or peritoneal effusions are in the majority of instances due to tuberculous infection. The kidneys, one or both, may be attacked with absence of lesions elsewhere. The ovaries and uterus are more frequently the seat of more or less extensive lesions in the she-cat than in the bitch. Serous or seropurulent arthritis may occur in the hip, stifle, or other joints. When the central nervous system is the seat of lesions, we may observe various degrees or forms of paralysis, such as ataxia, hemiplegia, or paraplegia. The middle or internal ear is sometimes involved, with

more or less destruction of the bone and disturbance of the nervous system.

As tuberculosis in the dog and cat is dangerous to man, and especially to children, more attention should be given to this subject, not only by veterinary but also by medical practitioners. It is much more prevalent in these animals than is usually thought. I have known several medical men who kept dogs or cats suffering from this disease and they have not had any suspicion of its true nature.

NOTE ON THE VESTIGIAL METACARPALS OF THE SHEEP.

By PHILIP J. WHITE, M.B., F.R.S.E.,
Professor of Zoology, University College of North Wales, Bangor.

Some years ago when studying the fore foot of the musk ox (*Ovibos*) I discovered two small bones, behind and towards the lower end of the cannon bone, which appeared to be the lower vestiges of the second and fifth metacarpals. I found corresponding structures, so small as to be easily overlooked, in the sheep, but I failed to find any trace of them in *Bos*. The preliminary work I have done places their identity beyond question. It is well known that in the sheep the proximal end of the metacarpal of the fifth digit is generally represented by a splint or spike of bone attached to, and sometimes fused to, the side of the cannon bone—the fused metacarpals of the third and fourth digits; that occasionally the upper end of the second metacarpal, instead of completely fusing with the cannon bone as it usually does, may remain distinct, and that both the second and fifth metacarpals may be absent as discrete structures.

In early lambs and full grown sheep the upper end of the fifth metacarpal is variable both in size and length, being sometimes quite small, and at other times extending downwards for about one-third or even one-half of the cannon bone. The lower end of this metacarpal is in the same line with the upper part, but separated from it by an interval, and when present is represented by a small swelling which may contain a cartilage. In a lamb (*in utero*, full term) I have found both the upper and lower elements continuous with each other; here the metacarpal consists of a slender bar or thread of bone with enlarged extremities capped with cartilage, the linkage between the upper and lower elements being complete. It is probable that the enlarged ends represent epiphyses. In a younger fœtus (36 cm.) there is the thread of bone without the osseous enlargements, only cartilage, the shaft ossefying first, as is usual with long bones. As growth proceeds a portion of the slender shaft disappears, probably uniting with the outer edge of the cannon, forming a slight ridge,

thus leaving the extremities apart; the only other alternative is absorption. The distal end of the second vestigial metacarpal is frequently represented by a small bone. The lower vestiges of both the second and fifth metacarpals are present in the goat.

I am anxious to acquire feet with instinctive malformations, goats' feet and goat fœtuses, and I shall be grateful to veterinary surgeons if they will bear my needs in mind.

TOAD VENOM.

By G. MAYALL, M.R.C.V.S.,
Bolton.

Some 330 years ago the bard of Avon wrote:

> Sweet are the uses of adversity;
> Which like the toad, ugly and venomous,
> Wears yet a precious jewel in his head.

No doubt since those days some toads have been killed in the quest for the "precious jewel," but if the strange jewel-box has not given up any treasure, there is little doubt about the toad being somewhat ugly and certainly venomous.

Popular superstition believed that when the batrachian reptile was disturbed or attacked it could spit poisonous venom on its enemy by filling its mouth from two glands at the back of the skull. Naturalists and anatomists have shown since those days that this idea was a mistake.

It does not spit venom, but becomes covered with milky-white and very strong poison when in acute agony, for instance when trodden upon or bitten, and unless the big skin glands be forcibly squeezed there will be no squirting. On the skin there are abundance of follicular glands having a special secretion always more or less acrid and irritating.

A young Welsh terrier went down to the bottom of a garden close to a damp and swampy place from which toads came up and crawled about underneath the vegetables. He was noticed to be playing with something and nosing it about, and tossing it up and biting at it. Soon he left off abruptly, and with tail down and disconsolate look rushed into the house and collapsed, foaming at the mouth and seeming in danger of suffocation. His mouth was washed out with cold water and the whites of three or four eggs given him at intervals. He gradually became less distressed, and in three or four hours, when out of trouble, he was given a dose of castor oil, and next morning he seemed well.

Four days later a favourite cat went down the garden to the same place and was noticed picking something up with her claws and tossing it up and biting it. Suddenly she desisted, and darted off as if possessed, ran into the house and collapsed, and seemed unable to breathe. White of egg and glycerine were given to her, and in a few hours she got up, but seemed quite blind, stumbling into the chair- and table-legs and not being able to travel straight when called. This condition lasted for about twelve hours, and then she slowly recovered her normal senses and sight.

The owner of the animals was much alarmed and suggested poison of a mineral or vegetable nature, but the behaviour of the subjects and the history of the cases did not tally with any toxic mishap that I had previous knowledge of.

A walk down the garden to the place where the animals had been, and from which they had departed in a hurry, revealed a mangled and half-dead toad, and there is little doubt that both the dog and cat had absorbed or swallowed a considerable quantity of the acrid secretion which exudes from the follicular glands on the skin of the toad.

Clinical Articles

PARALYSIS OF THE ŒSOPHAGUS IN THE HORSE DUE TO "GASTROPHILUS EQUI."

By F. F. HORTON, B.Sc., M.R.C.V.S.,
Hadlow, Kent.

History.—The subject was a chestnut cart mare, aged seven years. The mare had been out at grass all the summer, and was in good condition. It was noticed at the end of October that she was not feeding well, and occasionally when feeding threw up her head as though in pain. She was put in a loose-box and advice sought on October 29th.

Symptoms.—At first there were few symptoms to observe, but these were more pronounced in a few days. The temperature, pulse, and respirations were little affected. The mare seemed inclined but unable to feed. Water was drunk sparingly, but though mashes, gruels, grass, etc., were offered, after taking a few mouthfuls the mare suddenly stopped feeding, champed the jaws, spasms of the œsophagus were seen, but the food was not returned. Cut grass was eaten most readily, but after two or three mouthfuls the head was thrown up, a sharp cry emitted, frequent attempts at deglutition followed, wavy movements were seen along the course of the gullet,

and the grass swallowed. None was returned, but no further attempt to feed was made for some time.

After four to five days the mare, though not dull, temperature 101·4°, pulse a little quicker, respirations very little altered, showed signs of slight abdominal pain, sweating in patches, particularly in the perineal region. A small amount of firm dry fæces was passed. Tremors of the muscles occurred in the region of the shoulders and thighs. A slight snoring sound was heard. The mare was beginning to look tucked up.

At this stage *Grass Disease* was suspected.

It might be interesting to add there was a complete absence of cough, salivation, or regurgitation of fluids or solids.

Course.—Throughout the month of November these symptoms remained, although more pronounced and emaciation more marked. Sweating became more general, muscular tremors more continuous. On examination *per rectum* the colon was not impacted, nor was there any paralysis of the walls, though very scanty amounts of hard fæces were passed.

The mare remained bright throughout, and the eye a good colour.

Diagnosis.—Grass disease was turned down, owing to the absence of dullness, paralysis of the bowel, and the characteristic posture. Obstruction of the pharynx or gullet was considered, although an absence of cough, salivation, attacks of dyspnœa, or regurgitation of food. Exploration and manipulation of pharynx was carried out by a gag and torch. The stomach tube was passed into the œsophagus, without a clue to the condition.

The absence of cough, ptyalism, and attacks of dyspnœa ruled out tumours, foreign bodies, or parasites in the pharynx, though the snoring noise was unaccounted for. Eventually partial paralysis of the pharynx was diagnosed.

Treatment.—Consisted of hypodermic injections of strychnine to overcome the inertia of the pharyngeal muscles. (It was physically impossible to ball the mare, though repeated attempts were made, and drenching was considered inadvisable.) A blister was applied to the external pharyngeal region. Full doses of Liq. Arsenicalis were given in the drinking water.

After a week's treatment, the mare improved for two days only, and during this time fed better than she had all through, but then dropped back into the same condition.

At the beginning of December, as the mare was very weak and extremely emaciated, it was decided to destroy.

Post-mortem Examination.—The only lesion of any value on post-mortem examination was found in the lower third of the œsophagus.

This was studded with numerous larvæ of the *Gastrophilus equi*. These were of varying sizes, and many were embedded two-thirds under the mucosa.

Remarks.—The case is an interesting one, mainly because of the difficulty in diagnosis and the inability to trace a cause for this paralysis of the pharynx and œsophagus.

Had it been possible to diagnose the cause, what line of treatment could have been followed to dislodge the larvæ ?

A PRELIMINARY REPORT OF AN INVESTIGATION OF A CONDITION KNOWN AS "DRY COAT" IN HORSES.

By T. W. W. WRIGHT, M.R.C.V.S.,
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Government Pathologist, Penang.

During the last few years several instances of this condition have come under our notice, occurring in racehorses and polo ponies imported from Australia into Malaya. As far as we know the condition does not exist in Australia, and no instance has been observed by us among the native-bred ponies of Malaya or those imported from the Dutch East Indies. These two facts would at once make one suspect that the disease is due to diet which these animals receive, but further observation does not confirm this. Any attempt at producing the condition by diet has not succeeded so far.

General Description of the Disease.—In a racehorse or polo pony that has been perfectly well previously, it is noticed that he does not sweat as profusely as usual after his gallops, and then that he only sweats in certain parts of his body, namely, under the jowl, behind the ears, between the hind legs and under the saddle ; even these areas soon show less and less perspiration as the condition progresses, until within a few months there is practically no evidence of perspiration at all.

It is remarkable that a certain few animals continue to race even when practically completely dry coated, but even these animals are bad doers, and difficult to keep in condition because of their capricious appetite. One such animal we observed who, in spite of being dry coated for at least a year, continued to race well in the open horse class of Malaya, but who after a particularly strenuous race, in which he was only just beaten, came into the paddock, collapsed and died, with all the symptoms of acute cardiac dilatation. This case is mentioned to show that it is possible for an animal to continue to be useful even when completely dry coated.

But in the majority of cases the history is far different. With the first appearance of a dry coat the following concomitant changes are usually noticed. After his usual exercise the animal shows abnormal dyspnœa, which persists for several hours. His disposition is changed, he is no longer keen on his work, and takes every opportunity to shirk, and is even considered by his owner to be lazy. His coat becomes lustreless, his eyes are dull, his mucous membranes pale, and his temperature is elevated, even as high as 104°, especially after any exercise or in the heat of the day. His blood pressure is much increased (in one case it was over 400 mm. Hg. systolic), and his pulse rate is accelerated.

We have not observed any œdema, but there is a diminution in quantity of urine. His chest and abdomen show no abnormal physical signs, but his appetite is capricious.

All these symptoms and signs progress rapidly, and in a few weeks he may become quite useless. In extreme cases he cannot even walk without urgent dyspnœa ; most of his hair falls out ; he has constant fever ; and his urine is found to contain abundant albumen and casts.

In two instances after violent exercise two such ponies collapsed, their lives being saved by prompt venesection.

It occurred to us that this condition might be due to a general infection with some micro-organism, and about six months ago we grasped the opportunity of making a careful study of one case. A very beautiful chestnut mare about eight years old, whom we had known to be dry coated for over a year, and who had had every possible treatment given to her—rest, change of climate, change of diet, etc.—was finally to be destroyed. This was done with the "humane bullet," and immediately a blood culture was taken. The method employed was to put 10 c.c. of blood into nutrient broth medium, containing 2 per cent. glucose and 2 per cent. sodium citrate ; 3 c.c. of blood was put into a sterile test tube and allowed to clot, so that the serum might be used for agglutination tests.

A thorough post-mortem examination of the organs of this mare was made.

RESULTS—*Blood Culture.*—After forty-eight hours' incubation, a slight cloudiness was observed in the medium, which was found to be due to a bacillus, which was motile, Gram-negative, slightly longer than the typical *Bacillus coli*, having rounded ends, and being non-spore forming. It produced acid and gas readily in McConkey's litmus glucose broth. It did not ferment saccharose. This organism was agglutinated by the mare's serum in dilutions of 1 in 800.

POST-MORTEM FINDINGS—*Stomach.*—This organ contained numerous specimens of a small worm, probably *Habronema microstoma ;*

there was also an abscess about the size of a pigeon's egg with thick fibrous walls containing worms, probably *Habronema muscæ*. Microscopically, no special changes were noticed, except the formation of small cystic areas in the submucosa, with surrounding inflammatory infiltration, as the result of irritation from the worms present.

Intestines.—The cæcum and colon were fairly heavily infested with small roundworms; these were not particularly identified. The intestines show no special abnormality microscopically.

Kidneys.—Both kidneys were definitely enlarged, especially the right one, which was about half as big again as normal. The capsules stripped fairly easily, and there were no cysts nor calculi. On section there was evidence of swelling, most marked in the cortex. The pelves were normal.

Microscopically, the kidneys showed combined inflammatory and arterio-sclerotic changes. The smallest vessels were much narrowed; Bowman's capsule was thickened, and surrounded by collapsed glomeruli, which appeared as wrinkled structures, with a definite space between them and the capsule. In some places the epithelium of the capsule appeared to have vanished entirely.

The epithelium of the tubules was much swollen, the cells having a granular appearance; the tubules contained hyaline material; and between the kidney cells in some places there was definite leucocytic infiltration, as well as small hæmorrhages.

The picture was one of a mixed nephritis, showing different stages of the disease in different parts of the kidney.

Heart.—This was considerably enlarged, weighing a little under 9 lb. There was no pericarditis. All the cardiac chambers were hypertrophied, the left ventricle most so.

The valves showed no marked gross changes. The coronary arteries were thickened. There were no thrombi nor emboli.

Microscopically, the heart muscle showed marked hypertrophy, with occasional fragmentation of the fibres and leucocytic infiltration.

Aorta.—This was thickened, and less elastic than normal. There were no areas of calcification. Microscopically, the intima was thickened, the elastic tissue was sparse, and there was bulging of the intima in some areas. The muscularis did not appear to be much thickened.

The *liver* was moderately enlarged and fatty. Microscopically, the liver cells were cloudy, and there were many small areas of focal necrosis. No increase of fibrous tissue was noted.

The *spleen* showed no noteworthy changes.

The *lungs* were voluminous and definitely emphysematous. There was no chronic bronchitis.

The Skin.—A small area, devoid of hair, was examined. It had a peculiar shiny appearance and seemed devoid of elasticity. Microscopically, there was moderate thickening of the epidermis, with an almost complete absence of elastic fibres in the corium. The hair follicles were atrophied and the bulbs shrunken. No definite changes were recognised in the cutaneous bloodvessels. No normal sweat glands could be recognised, but some markedly tortuous, atrophied ones were seen, in which the cells were granular and shrunken, and around which there was a distinct replacement fibrosis.

The pathological and bacteriological findings were those of a chronic infection, and we decided to make blood cultures from horses similarly affected, and, if possible, to prepare autogenous vaccines for them.

We have made blood cultures from four such horses up to date. In all these horses the same organism has been found, and an autogenous vaccine has been made up for each horse. The following is a brief résumé of each case treated with an autogenous vaccine:—

Case 1.—Bay mare, 14.2; 9 years. Imported in 1921 for racing, broken to polo in 1922. No history as to when the condition started, but has been dry coated for more than two years.

Shows distress on exercise and is useless except for very slow chukkas. Eight injections of an autogenous vaccine were given at intervals of five days commencing in October 1924, initial dose 750 million, which was gradually increased to 2,000 million. The temperature was taken 24 hours after each injection; there was no temperature reaction.

This pony has shown marked improvement in her general condition, the coat has quite regained its normal lustre, the eyes are bright and the appetite good. The dyspnœa while much improved has not entirely disappeared. Sweating has recommenced after exercise in the jowl, along the edge of the mane, to some extent behind the ears, and more noticeably between the hind legs; the rest of the body, however, including the area under the saddle, is still dry. A blood culture taken one month after completion of the treatment was sterile.

Case 2.—Black mare, 14.1; 10 years.

Imported in the year 1919 for racing, broken to polo in 1921. Dry coated about four years. Condition good, but very little used owing to distress on exercise.

The animal collapsed in 1923 after polo; life was saved by venesection.

The coat always in very bad condition, scurvy, and the hair scanty

and dry. The urine contains albumen and numerous casts. Hæmaglobin 60.

Ten injections of an autogenous vaccine were given at intervals of five days in December 1924, commencing with a dose of 1,000 million, which was gradually increased to 3,000 million. The temperature was taken 24 hours after each injection. Temperature actions occurred after the 6th injection (2,300 million) 103°, and after the 7th injection (2,500 million) 104·5°.

A blood culture taken one month after completion of the treatment was sterile. Hæmaglobin taken at the same time was 75, and the urine contained no albumen nor casts.

This pony has improved very much in general condition, the hair is growing all over the body, the eyes are bright, and the appetite is very good.

The dyspnœa has almost disappeared, and the animal is now being conditioned for fast polo, and has already played in several fast chukkas, without distress. The pony is sweating over the entire surface of the body, but the amount of sweat is not so great as one would get in a normal horse under the same conditions.

Case 3.—Chestnut gelding, 14.2; 7 years.

Imported for racing in 1923. Condition good, but has been going dry for the past three or four months; was reported to be quite dry at the end of January.

The disease does not appear to have caused the animal much distress on exercise; he has been racing regularly.

Treatment with an autogenous vaccine was begun on the 11th of February, 1925; the initial dose was 1,000 million, the intervals between the injections five days.

The pony is still under treatment; he has already received seven injections, the intention is to give ten; he received 3,500 million for his last dose; he has had no temperature reaction.

The pony was cantered for a mile and a half on the racecourse on the morning of the 11th of March; he sweated freely after exercise over the whole surface of the body. The action of the sweat glands appeared to be normal. The general condition and appearance of the pony has much improved.

Case 4.—Brown gelding, 15.2; 6 years.

Imported for racing in January 1924; was the best griffin of the batch, winning races in the May and July meetings.

The horse in July was in perfect condition, but started to go dry very soon afterwards. The condition was more severe, and there was more constitutional disturbance than in Case 3.

The horse was raced in January, but was never placed; at that time he was showing all the symptoms of "dry coat."

Treatment with an autogenous vaccine was commenced on the 11th of February, 1925, the treatment being the same as for Case 3, but temperature reaction occurred after the 4th injection (2,500 million) 104·8°.

The horse was cantered for a mile and a half on the racecourse on the 14th of March; he was almost dry immediately after the exercise, but commenced to sweat within five minutes. Moisture was observed on the muzzle, under the jowl, on the sides of the neck, under the saddle, and between the hind legs. Sweating was not so free as in Case 3.

The horse has regained his appetite and his condition has much improved.

CONCLUSIONS.—We are not prepared to make any definite claims on such few observations, but as far as we have gone the following results are definite :—

1. The same organism was recovered from four horses suffering from the same disease apparently, but in different stages.

2. All the ponies treated have definitely improved under treatment with an autogenous vaccine, and this without any change of diet or marked difference in exercise.

3. The two ponies treated in whom the disease was known to be of long standing have improved, but in view of the pathological findings in the one case thoroughly studied we cannot hope to restore these ponies to normal health.

This study will be carried on systematically, and any further developments reported in due course.

AN INTERESTING FOREIGN BODY IN THE PAROTID REGION OF A HORSE.

BY FREDERICK HOBDAY, F.R.C.V.S.,
London.

AT a surgical demonstration arranged before the members of the North Wales Veterinary Medical Association, on the 14th of March, 1924, at Llangefni, one of the subjects was a valuable shire mare, six years old, a patient of Mr. Trevor Williams, J.P., M.R.C.V.S., which had been the subject of a purulent discharge from a sinus in the region of the right parotid region for fourteen months. It had started, apparently, as a small abscess, but had never given rise to much inconvenience, other than to be an eyesore, and as the mare kept in good bodily condition, the owner had continued to work her regularly, just merely keeping the outside clean.

A probe could readily be passed in a backward and inward direction to the depth of about 9 inches, and a foreign body of some kind could distinctly be felt. Upon an incision being made under chloroform anæsthesia a thin piece of wire 3½ inches long was removed with forceps. Its exact method of entry remains a mystery, although the owner asserted that it was of the same calibre and appearance as one of the strands of the wire rope which connected his chaff-cutter with the driving wheel of the electric motor which drove it.

This explanation seemed quite feasible, and if it was so the wire must have been swallowed amongst some chaff and have stuck in the back of the pharynx or the upper portion of the œsophagus and eventually worked its way towards the position from which it was eventually removed.

The patient made an uneventful recovery.

REMARKS ON SPORADIC ABORTION IN THE COW.

By E. McSWINEY, M.R.C.V.S.,
Cork.

Authorities reckon that only 1 per cent. of all bovine abortions is non-infectious. In practice it is a wise precaution to classify all cases of abortion as due to infection. It is not uncommon to find that only one cow of the herd aborts. Circumstances do not permit of isolation of the affected animal, and no measures are enforced in order to prevent the disease, if infectious, from spreading. The rest of the herd remains healthy. In such cases is one justified in assuming that the accident is due to infection? It is granted that, in an outbreak of infectious abortion, only one or two cows might "sling" their calves during the first year. But if there are no aborting cows or only one during the second year, it is unlikely that the single accident of the previous year was due to infection. It seems remarkable that if only an individual cow aborts it is frequently the heaviest milker. We find no clinical evidence that any one of the usually accepted causes of sporadic abortion is operating. Direct injury from kicks, falls, etc., is common in cattle, but abortion as a sequel is rare. Stockfleth and others held that a predisposing cause of abortion is the competition between the uterus and the udder.

> "The cow during the period of gestation yields a considerable amount of milk. On the one hand more food is taken in to nourish and develop the fœtus; on the other, many constituents leave the body in the form of milk. The milch cow has been bred for generations with a view to produce a great

> milker, and has about reached in that respect the physiological limit. There exists, as Stockfleths put it rightly, a competition between the uterus and udder. Stockfleth deducts from this that when the latter is victorious the former succumbs and abortion takes place. He believes therefore that this physiological relationship ought to be looked upon as a predisposing factor in the frequently occurring abortion of the cow" (De Bruin's *Bovine Obstetrics*).

If there is anything in Stockfleth's teaching of more than twenty years ago, an opportunity is at hand to test it. With the advent of cows with an enormous milk yield of two to three thousand gallons a year, one would expect an increase in the number of cases of sporadic abortion. Cows of such a milking capacity are valuable. It follows that their offspring both male and female also are valuable. The question arises, do all of these 2,000-gallon cows produce a calf each year? If not, then they may be of no greater value than cattle which secrete only three-fourths of that amount of milk but produce a calf annually. Again, granted a calf each year, is the offspring from calf-hood to maturity as healthy as that from a dam with a smaller milk yield? We hear of the successes, but what about the failures?

The subject can be examined from another point of view, viz. the dietetic. On many farms the food supply is defective in quality and badly balanced. Frequently the nitrogenous ratio is too low. It is common to find, during winter and spring, that the food consists solely of roots, hay, water, and a mouthful of grass.

It might be argued that ordinary food grown on the farm is not likely to be deficient in nutritive materials. All food grown on good land, if well saved, will not be wanting in its normal constituents. To quote an eminent authority, Sir F. Smith :—

> "If the land on which a crop is grown be poor in quality, the produce will be in a similar condition; it will be deficient in those constituents on which its nutritive value depends."

Take hay, for example, which certainly is one of the best, if not the best, single foods for milch cows during winter and spring. What do we find? It is no exaggeration to say that on the majority of farms it is cut too late, and it is not always well saved. With a diet of roots and poor-quality hay it is unlikely that the excreted salts of calcium, potassium, and sodium in the milk will be replaced by the intake of suitable food. The larger the yield of milk the greater will be the amount of those salts excreted by the cow. In the case of the heavy milker, instead of replacing some of the bulky food by

concentrated material, including one rich in calcium, such as bean meal, the farmer further increases the bulky feed. If that error continues the cow will suffer. Some writers hold that the cow continues to excrete calcium in her milk although those salts are deficient in the food. Surely that mischief cannot continue indefinitely. The cow must suffer. All cows might not suffer alike. Some will show digestive trouble. Who can say that abortion never occurs from dietetic errors—whether a lack of calcium salts, vitamin hunger, or what not ?

MAGGOTS AS AN INDIRECT CAUSE OF JOINT-ILL IN CALVES.

By E. MORGAN, F.R.C.V.S., D.V.H.,
Puerto Cabello, Venezuela.

" There is nothing new under the sun," including maggots, which are old familiar faces to all of us, especially to those living in the tropics. Even Virgil and Kipling considered that it was no degradation to discuss these fat-forming parasites. *Vide* Kipling, vol. iii, *The Bees and the Flies :*

> Through putrid offal while above
> The hissing blow-fly seeks his love,
> Whose offspring supping where they supt
> Consume corruption twice corrupt.

The West Indian nigger calls them " maggage."

In Venezuela I consider that they cause more trouble and loss to cattle-breeders than all other classes of parasites. On the open plains, which are fairly free of thickets, the mother fly is not so often met as on land bordering forests or land containing a great amount of scrub or brushwood, where there is a constant war being waged against them, especially where breeding cows are kept. For each hundred head of cows with their calves on an up-to-date breeding farm, one man is fully occupied in curing and preventing maggots from endangering the lives of animals, as these wriggling parasites are able in a very short time to convert the whole protein of a calf's body into fat.

There are some particular areas on the calf's body which the herdsman should examine daily for several weeks after its birth. Very often he is unable to find a newly born calf for days, as the cow has a natural instinct for concealing her offspring after its birth, until its legs begin to grow strong and it begins to look out through silly eyes at the mysteries around it ; then it totters along by its mother's

side. During the first days after its birth, owing to the tall grass, it is almost impossible to find the newcomer, but what a devoted herdsman does, if the moon assists him, is to conceal himself and try and follow the cow, which, almost without exception, sleeps alongside her calf at night. Again, almost at daybreak or dusk, one often succeeds in coming across the two together.

If a calf is not found the day it is born, one can be almost certain that the umbilical region is swarming with maggots, as well as the inside of the mouth, around the lips and gums, and often the anal region.

The first process, when a calf is found, is to examine these regions and dress them with Creolin or Izal.

I could not quite understand, at first, why so many calves in Venezuela were suffering with " Joint-ill," because the calves, almost without exception, are born here in the open, which is not only more natural, but by far more hygienic, than in the average stall, which often gets contaminated in spite of the best of care.

It has been proved in Great Britain on some farms where " Navel-ill " was prevalent amongst foals, that it was reduced considerably, and almost to nil, by having the mares served late in the season, so that they would foal out in the open field. Amongst Welsh ponies which run semi-wild I never saw a single case of " Navel-ill."

Joint-ill is known under another name in Venezuela, viz. " Manca de la sabana " (Lameness of the savannah). This disease is common only on farms where maggots are prevalent, and then only when maggots have formed on the umbilical region of the calf, soon after its birth. I have often been consulted by different breeders as to the cause of this disease. In order to convince them that only calves with an infected navel, caused through not dressing the part immediately after it is born, fall victims to this disease, we demonstrated the fact to them as follows, which sufficed to convince those of a dubious turn of mind:—

We picked eighteen newly born calves which were born in the open fields on the same farm. We placed six of them, immediately after they were born, in a loose-box screened by wire-gauze, where no flies could enter to deposit their eggs on the navels, and left the navels without any kind of antiseptic dressings, and they healed up without any signs of maggots.

Of the other twelve which we left in the open fields, six had their navels dressed regularly with antiseptics, so that no maggots could form there. The other six we left without any dressing—i.e. exposed freely to the flies—which soon visited them, as we found maggots there, on the six, the second day. These maggots were

removed daily, for two days, but no antiseptics applied until the third day after their first appearance; but afterwards antiseptic dressings were applied.

RESULTS.—*Three* of these last lot of calves which were left in the open for several days without antiseptic dressings developed Joint-ill. One of these died and two survived, and are now about fifteen months old. One has a stiff hock and the other an enlarged pastern.

The six kept in the loose-box neither developed maggots nor Joint-ill; this applies as well to the six left in the open, which were carefully dressed with antiseptics so that no maggots could form on their navels.

We have made several trials, and they all more or less gave the same results, with the exception that the percentage of cases of Joint-ill was not so high as the above.

The majority of the natives ignore the idea of applying antiseptics against the invasion of flies and maggots, as they consider that the tongue of the cow can dominate the maggots, so the calves are often sadly neglected. Those who are convinced of the after-effects of maggots have reduced the death-rate from "Navel-ill" to a considerable extent by treating the navel region with antiseptics soon after the calves are born. If this is done the part heals up very soon, instead of being kept as a seat of infection through the presence of maggots. Not only do the majority of these natives believe that the cow is able to protect her offspring against the invasion of all external parasites, but they also believe that they have the divine right to destroy maggots on their stock by means of prayer alone. They say that only certain persons amongst them have this power, but they generally have one or two in each district to cure maggots and snake-bites. They cure snake-bites (or in other words drive the evil spirit away!) by placing a stick in the hands of the bitten person, and this must be held firmly until the person is better, or as is often the case worse. This stick must be cut off a particular class of tree on Good Friday. Fortunately, medical men, except in the most remote parts, save almost 100 per cent. of cases, if they are called in time, by a very simple treatment, i.e. internal doses of calomel mixed with strong lime-juice, as well as local treatment at the seat of infection.

Antidote against Snake-bites, such as the Rattlesnake, etc.—This originally came to Venezuela from Dr. Coriolano Dutra of Brazil. This remedy is now extensively used by the medical men of Venezuela. What surprised me at first when I was told about it was the strong dose of calomel. Dr. Dutra says it is infallible, even when

the poison has gained the general circulation and hæmorrhages have set in, and the heart palpitates.

Give the patient 2 grams (not grains) of calomel mixed in two large tablespoonfuls of lime-juice (i.e. squeeze the juice out of the limes). Repeat this dose of 2 grams in two hours' time. When the third dose is taken the patient is out of danger. Dr. Dutra further states he has seen cases of persons almost on the point of death recovering, and when they had taken the third dose felt fit almost to go on with their usual work.

We often have applicants for a post of ranch manager. The first question we put to the applicant is, whether he believes in destroying maggots on stock by means of creolin or by means of prayer? If he answers, as most applicants do, that he believes in curing by prayer alone, then he is told not to expect God to be his servant as well as his master, and in that case we must have a person who believes in creolin as well.

The majority say that they do not possess the divine right unless they stand in front of the animal, while on the other hand a few wizards say that it is immaterial to them whether the animal is present or not.

Here is a copy of the universal prayer of Venezuela :—

(Begins making the sign ✝ of the cross) : " In the name of God, the Virgin, and the three Divine Persons (sign ✝ of the cross), I exhort you perjurious animals (the maggots) (sign ✝ of the cross) to die one by one. Saint Joachim who cures them, together with Simon Cyrino, to kill them in their own blood, and I believe (sign ✝ of the cross) in the Holy Spirit. Amen."

NOTE.—To be prayed as many times as there may be different colours on the animal.

The men called " Santiguadores," i.e. persons who pray to cure cattle and also to remove the evil spirit from children—" mal de Ojo "—very seldom give away the prayer they use for the purpose. There is a famous one in Carácas, the capital town of Venezuela, whose name is " Negrin," who is making almost any money he requires by pretending to cure well-to-do people, and also animals, by means of prayer or " oración," as they call it.

While examining a mob of steers at the cattle yards of the Venezuelan Frozen Meat Works a few weeks ago, I noticed that one of the steers had a nest of maggots in the scrotal region. When the animal was slaughtered, a few minutes afterwards, I found a circular area on the arch of the tongue, which was studded with fully matured maggots, which had penetrated deeply into the tissue. Most probably this steer, having an abrasion on the tongue, and while licking

the maggots off the scrotal area, some of the eggs got deposited on this injured part of the tongue. One would think that, being situated so far back in the mouth and the tongue almost continuously being moved against something else, that these maggots could not possibly survive, but, on the contrary, they seemed to fully enjoy their enclosed movable fattening ground.

We lost a horse a few weeks ago which one of these "Santiguadores" had borrowed. The bit injured the interdental space, with the result that maggots settled there, and eventually extended their feeding area under the alveoli of the incisors as well as the premolars, with the result that most of these dropped from the mouth, so the animal got into such a weak state that he never recuperated.

COMMUNICABILITY OF RINGWORM FROM ANIMALS TO HUMAN BEINGS.

By Major-General Sir JOHN MOORE, K.C.M.G., C.B., F.R.C.V.S.,
London.

QUITE common in *Tinea tonsurans* from cattle. I myself in boyhood and in cattle practice in my young days contracted it several times on my arms, but easily cured it with weak biniodide of mercury ointment.

In 1911–13 my children had a dreadful experience of ringworm in the scalp, and it took nearly eighteen months to eradicate it. They were under treatment by Dr. Beatty, Specialist in Dermatology, Dublin, and his chief remedy, so far as I remember, was a mixture of Tincture of Iodine, Acid Carbol Glycerine, and Spirits Vini Meth. Diseased hairs had to be extracted individually. The hair was clipped quite close and kept so constantly. Copper ionisation was of no avail, and I was against X-ray treatment. It was attempted on one of the children once, but the apparatus did not work properly, and I was glad it was discarded, as I thought it rather risky.

Dr. Beatty said the variety of ringworm was *Trichophyton microsporon*. I attributed the cause to my carriage horse, a remount which, like a good many other remounts, I had under treatment for slight ringworm. With the casting of his coat and short hair, the nurse and children sitting behind him in the carriage (a Victoria) were frequently exposed to the falling hairs. Dr. Beatty, however, would not have this view, and very definitely said this form was not communicable from the horse. If this were not so, the only other source of infection that I can think of was from old ivy and fungus of walls in the garden of the house I rented in Dublin, the state of the premises

requiring a vast amount of clearing. But the most probable cause by far was my horse.

At one time I used to say that the person who could not cure ringworm in one dressing should be put under arrest. I changed my opinion after encountering some of the forms of ringworm met with amongst remounts in Ireland. One form ran in lines usually along the course of a trickle of water, if the dressing used happened to be a watery one, or if the animal had been washed or wetted. I remember one horse with a line of ringworm commencing from about the acromian process of the shoulder and ending just above the knee. I was defeated after weeks and weeks of treatment, and I tried every sort of dressing. Professor Meltam was much interested in ringworm at the time, and so far as I remember had isolated over thirty different varieties.

An extraordinary thing about ringworm is that it often disappears as mysteriously as it comes. A change of locality is sufficient often to effect a cure, or at all events to start a cure. Certainly our own children completed the cure very rapidly when we were moved from Dublin to Aldershot. I remember Mr. Richard Roberts of Tunbridge Wells telling me of a bad visitation of ringworm in his family, and how mysteriously it disappeared when he changed residence.

It is extraordinary also how ringworm affects only (practically) young animals and children. After thirteen years children are strongly immune. But for this we should have more of it amongst men in the army.

AN UNCOMMON SITE FOR ECHINOCOCCUS CYSTS IN THE SHEEP.

By A. C. AGGARWALA, B.Sc.Hons. (Punjab), M.R.C.V.S.,
Professor of Hygiene and Dietetics, Punjab Veterinary College, Lahore.

A FAT-TAILED (Dumba) ram, one year old, was brought as an outpatient to the college outdoor clinic on the 4th of February, 1925, for treatment of an inflammatory swelling at the brisket. The owner stated that a hard swelling about the size of a walnut was first noticed about four months previously, which was not painful on manipulation. The swelling had increased, gradually becoming more and more painful and doughy to touch. The animal had shown some disinclination towards food for the last few days.

On examination the subject was found to be in a fairly good condition, showing no apparent symptoms of emaciation. A fluctuating swelling about the size of a hand was discovered on the sternum

extending from the third to the sixth rib. It was pointing at two places with collateral œdema and partial absence of wool over the swollen area. The swelling was painful, hot and soft. The bowels were slightly constipated; the pulse, temperature, respiration, and mucous membranes were normal. An abscess, due primarily to some mechanical injury from a foreign body and subsequent infection, was suspected. After preliminary surgical preparation of the site the swelling was lanced, and a number of cysts (about twenty-five) were evacuated, with about an ounce of sero-sanguineous inflammatory fluid. The cysts varied from the size of a pea to a walnut, and on microscopical examination proved to be polymorphous echinococcus cysts. After the removal of the contents, the cavity was washed, disinfected, and plugged.

In the sheep the liver is the commonest and most favourite seat of invasion and development of echinococcus cysts, although they may be met with in the lungs, kidneys, spleen, pancreas, etc. Echinococcosis in the subcutaneous tissue, and especially in the region of the sternum, is seldom seen.

In Neumann's *Parasites and Parasitic Diseases of the Domesticated Animals*, edited by Fleming, a reference to a case in a horse is made in which Raymond found that hydatid cysts formed a tumour on the region of the ribs which persisted for seven years, and finally disappeared after having thrown out echinococcus vesicles on several occasions.

SUPERFŒTATION AND MENDELISM.

By MAJOR J. R. HODGKINS, D.S.O., R.A.V.C.,
Razmak, Waziristan.

ALTHOUGH superfœtation is an accepted fact in the physiology of reproduction, the opportunity to observe with distinctness the influence of the dual parentage does not occur frequently.

The following case, which is within the knowledge of the writer, may thus be of interest. An Airedale bitch was lined by two dogs: (*a*) an Airedale; (*b*) a Saluki.

The Airedales were both fair types of their breed. The Saluki had been brought from Persia to this country (India) by an officer. The bitch had six puppies, three of which had the Airedale characteristics (two dogs and a bitch), the remaining three (all dogs) had the undoubted "long dog" features of the Saluki.

A photograph showing one of the "Airedale" bitch puppies with her Saluki brother is enclosed (Figs. 1 and 2). It is interesting to note the entire dominance of the Saluki, with his long line of ancestry, over the more or less modern Airedale; all features of the latter are wiped out.

In this camp also there was until recently a dog out of a bull terrier bitch by a Saluki which the writer is assured had all the points of the Saluki and none of the bull terrier. He regrets not to have seen this case.

Fig. 3 is a study in Mendelism as was the first. The Sealyham

FIG. 1.—Puppy with Saluki Characteristics.

FIG. 2.—Puppy from Same Litter as Fig. 1, with Airedale Characteristics.

FIG. 3.—Result of Mating between a Cocker Spaniel Dog and a Sealyham Bitch.

bitch " Becky " had alliance (or mésalliance) with a Cocker Spaniel. The result of this was nine black puppies ; the two small fellows in the picture (Fig. 3) were permitted to live.

This shows : (*a*) that the black colour of the Cocker is dominant

to the white of the Sealyham. (*b*) That the low body and short legs of the Sealyham is dominant to the longer legs of the Cocker.

Then the features are not so distinct, but still in accordance with Mendel's Law. Looking at the black pup on the right of the picture, one might from his ears and facial expression imagine him a rather indifferent Cocker.

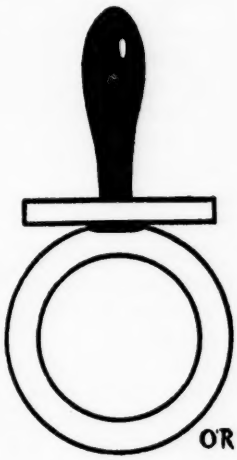
The pup on the left, except for the carriage and length of his ears, is very like "Becky."

BABY'S "COMFORTER" SWALLOWED BY A DOG.

By ALFRED SAMS, M.R.C.V.S.,
Muswell Hill, N. 10.

I was recently called late one evening to see an Alsatian puppy, three months old, that had swallowed a baby's "comforter."

The animal appeared quite normal, and I could detect nothing abnormal on palpation of the abdomen, which was very distended with food.



I injected a full dose of apomorphine hypodermically, and this quickly had the desired effect, but no foreign body appeared in the vomit.

I called first thing the following morning, and the puppy was still in good spirits and had shown no pain. I was still unable to feel anything; again the alimentary tract appeared very full of ingesta.

I ordered suet pudding with meat and gravy to make the meal more tasty, hoping that this stodgy diet would carry the offending body along with it.

At midday I had a message to say the "comforter" had been passed intact.

The foreign body was less than twelve hours passing through the puppy.

TRANSMISSION OF SARCOPTIC MANGE OF THE DOG TO MAN.

By FRANK CHAMBERS, O.B.E., F.R.C.V.S.,
Wolverhampton.

In June 1921 the kennel-man from an establishment where six or seven spaniels and retrievers are kept brought a young spaniel dog to me suffering from sarcoptic mange. The dog was kept and

remained under treatment for a month, when he was sent home cured. In the meantime two of the other dogs had developed the disease, and were treated by the kennel-man at home.

On October 5th the owner of the dogs 'phoned me to ask if I would mind having a look at his man, as he was very much afraid that he had got mange on his head. He also informed me that the man had been to three doctors as well as the local hospital, but the disease was in no way being cured or even checked. The man appeared with his pockets bulging with bottles containing the remains of the various remedies that had been thrust upon him. One doctor had evidently prescribed Dilute Acetic Acid, another Liq. Calcis Sulph., and a third Liq. Plumbi Sub. Acet. The poor man had used all these various remedies, but he stated that the itching at night was unbearable. The hair had practically all come off his head, and his scalp was covered with dry crusts and scales. I gave him a pint bottle of Sulphur, Creosote, and Oil, and told him to apply it on four successive nights and then wash, repeating the treatment until all the irritation disappeared. He came to see me on October 25th, and the mange was cured, but the hair refused to grow on several places. He presented a piebald appearance. I gave him a box of Biniodide of Mercury in Vaseline 1 to 16, and told him to lightly rub it on at night, covering the head afterwards. He apparently got his wife to do the rubbing, and she did it to such a tune as to raise one huge blister on her poor husband's head and nearly drive him mad. However, after all the pain, etc., had disappeared he grew a lovely crop of hair, but instead of it being dark as it was before, it is now a perfect golden colour.

SULPHONAL POISONING IN A CAT.

By T. F. PRIME, M.R.C.V.S.,
Upper Norwood, S.E.

An owner having a very nervous cat which she wished to chloroform, gave the animal 10 grains of sulphonal; this only made the cat slightly sleepy, but more nervous than usual, so another 30 grains were given, but had comparatively little sedative effect, so after four hours another dose of 30 grains was given. This in three hours' time had quite a peculiar effect on the cat, causing sleepiness, but on the slightest unusual sound the cat was seized with symptoms practically simulating those of epilepsy, rushing around the room, knocking into articles of furniture, trying to climb up the corners of the room, carrying its head a little on one side, and

having partial paralysis and loss of control of the hind quarters. After running excitedly around the room several times it would fall down on its side from exhaustion. Chloroform was administered during one of these attacks, and the cat quickly died owing to heart failure.

HYDRONEPHROSIS IN THE FOX.

By J. R. CUNNINGHAM, B.V.Sc., M.R.C.V.S.,
Summerside, Prince Edward Island, Canada.

THE carcase of an adult male silver black fox was received on the 11th of January for examination, with the history that it had not been doing well for the past six months. Although it had kept in fair condition, it appeared dull and listless. It was found dead in the pen on the 10th of January.

Autopsy.—The right kidney was converted into a greatly enlarged fibrous sack, from which all kidney tissue had entirely disappeared. It weighed 152·15 grams, and contained 122 grams of a brownish tinged fluid, on the surface of which was floating a small quantity of oily substance. The right ureter was greatly enlarged from its origin at the pelvis of the kidney to within about 5 centimetres of its insertion into the bladder, where it abruptly changed into a thick fibrous cord, 3 millimetres in diameter, through which fluid could not be forced, and on microscopic examination no opening could be discovered.

The left kidney was slightly larger than normal, greyish in colour, irregular in shape, and covered with small depressions, which gave it a granular appearance. The capsule was firmly adherent. The pelvis and the ureter for about two-thirds of its length was appreciably distended. A mature female worm (*Capillaria plicata*) was found in the ureter near the kidney. The cortex was firm in consistence and comparatively thin; a histological examination revealed extensive chronic nephritis.

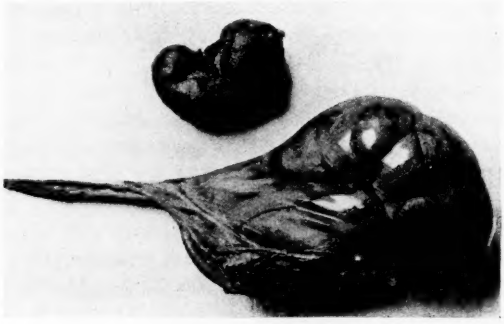
The bladder contained a small quantity of muco-purulent material, which consisted largely of desquamated epithelial cells, worm eggs, and leucocytes. The mucous membrane was thrown into ridges, the summits of which presented numerous hæmorrhagic areas. Eight mature worms (*C. plicata*) were found attached to the mucous surface.

CASE NO. 2.—The carcase of a female silver black fox, aged ten months, was received for examination on the 23rd of February, with the history that it had always been in poor condition. It had mated on the 10th of February and apparently was pregnant. It was found dead in the pen on the 21st of February.

Autopsy.—Intussusception of about 2 inches of the ileum was

found near the cæcum. The area involved was almost black in colour and necrotic. The lumen of the intestine was filled with a dark-coloured blood-stained mucus.

The left kidney was converted into a greatly enlarged fibrous sack filled with a brownish tinged fluid. The ureter, at its origin at the pelvis of the kidney, was greatly enlarged, but gradually diminished until it reached the normal size near its insertion into the bladder, where the lumen was completely obstructed for about ½ centimetre. The ureter, at its insertion into the bladder, appeared perfectly



HYDRONEPHROSIS IN THE KIDNEYS OF A SILVER FOX.

normal. The right kidney was dark purple in colour, irregular in shape, and considerably larger than normal. The surface was covered with small depressions and the capsule firmly adherent. The pelvis was dilated and contained 3 cubic centimetres of urine. The ureter appeared normal. The left kidney weighed 101·17 grams and the right kidney 20·11 grams. The average weight of a normal fox kidney is approximately 12·07 grams.

Hydronephrosis is not an uncommon condition among silver black foxes reared in captivity, and is usually unilateral, being caused by some obstruction of the ureter. In the two cases examined the ureter at the point of obstruction was converted into a hard cord-like structure composed largely of fibrous tissue. Unfortunately, both carcasses had frozen immediately after death, which may have obliterated any evidence of inflammation if present.

Of the many causes to which hydronephrosis in domestic animals is attributed, none appear quite to explain why the condition should be so prevalent among foxes. It is this absence of a satisfactory explanation which prompts the writer to suggest still another cause.

During summer and autumn parasitic infestation among foxes

is almost universal, one of the most common parasites being the hook-worm (*Uncinaria polaris*). Where heavy infestation occurs, large numbers of the larval forms may be found, situated in small whitish nodules throughout the body organs and tissues. The larva may be demonstrated by carefully removing one of the small nodules and crushing it between two glass slides. These nodules are the size of a small pin-head, and most frequently found in the lungs, liver, kidneys, and lymph nodes, where they are easily recognised.

A histological examination of a newly formed nodule reveals the larva surrounded by an area densely packed with leucocytes. In a great many cases the larvæ die and the nodule becomes converted into a necrotic mass. Where this occurs in the kidney, the part of the tubules and glomeruli involved in the nodule are nearly always destroyed. Destruction of the glomeruli or any part of the tubule leads to atrophy of the whole tubule and glomeruli. The necrotic area heals with the formation of much scar tissue, which contracts, leaving a depression on the surface of the kidney. In time the kidney may become shrunken, firm in consistence, covered with small depressions, and the capsule firmly adherent.

A rough outline has been given of what takes place when the hook-worm larvæ lodge in the kidneys and other organs, and a probable explanation of the chronic nephritis so frequently found in foxes. The point which I particularly wish to emphasise is the possibility of the hook-worm larvæ carried in the blood becoming lodged in the wall of the ureter. Should this occur and the same degree of reaction be produced which takes place in other body organs, the repeated formation of nodules followed by necrosis and healing with scar-tissue formation would be sufficient to cause partial obstruction and later permanent constriction of the ureter, and ultimately predispose to hydronephrosis.

SOME CLINICAL CASES IN FOWLS.

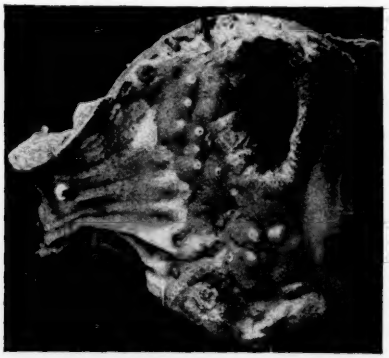
By A. S. CANHAM, M.R.C.V.S.,
School of Agriculture, Potchefstroom.

I AM sending on to you a few records with photographs of cases that have occurred on the farm here.

Case 1.—This was the case of a white wyandotte cock belonging to a big poultry plant some distance from Johannesburg. It was received for post-mortem examination.

The history received was that he was a very vigorous bird and he was found dead, never having shown any signs of sickness. On post-mortem the muscles were extremely pale and no blood could

be obtained on cutting into them. When the organs were exposed one was struck with the size of the heart. On examination it was found that within the pericardium (the covering of the heart)



Crop of Fowl (Case 3).

was an exact model of the heart in a large blood clot. A rupture was found in the right auricle of the heart. All the other organs were

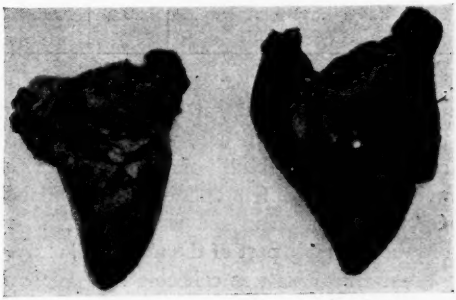
Granuloma of the Foot (Case 2).

healthy, although the presence of a few tapeworms were noted in the intestines.

Case 2.—The photo in this case speaks for itself. This was a white wyandotte hen bred in Potchefstroom and was a fair egg-pro-

ducer. The enlargement commenced slowly, and after some little while reached the size shown in the photo. It did not affect its appetite. One thinks that scalyleg may have been the first step, followed by too vigorous a line of treatment by the owner. The tumour was diagnosed as a granuloma (see illustration).

Case 3.—This was a white leghorn pullet received from the poultry division, and was suspected of, in poultry language, "going light." In addition "leg weakness" was evident, the bird being unable to stand. From the fæces one was able to obtain a few segments of tapeworms, and on microscopical examination after centrifuging and washing the sediment, one also obtained roundworm eggs. Its



Bloodclot Model of the Heart (Case 1).

appetite was fair, but there was a marked anæmia with an eosinophile leucocytosis. No treatment was adopted, and one morning it was found dead. Post-mortem: The crop contained two long roundworms, each about the length and thickness of the lungworm of sheep. The stomach showed a catarrhal gastritis, and contained two small roundworms about 3 mm. long. In the muscular part of the stomach (proventriculus) were found numerous embedded stages of worms. These nodules on enucleation contained masses that resemble four red miniature barrels joined at the tops and bottoms.

In addition, in the wall of the stomach near where it continues as the gizzard was a large cavity; this appeared to resemble a large gastric ulcer. At the bottom of the cavity were several small patches of ulceration. The muscle forming the wall of the cavity was very much thinner than the remaining stomach wall. Roundworms were present in the intestine and many tapeworms were also found.

Case 4.—The subject of this case was a white leghorn fowl born in 1921, and one of four sent into Potchefstroom for the Egg-Laying Competition at the school here. She arrived here in April and was placed in a pen.

The following is the table of eggs laid by herself and her sisters :—

	Subject	2	3	4
April 1st to April 28th	0	14	18	10
April 29th to May 26th	0	6	16	7
May 27th to June 23rd	2	8	20	13
June 24th to July 21st	2	7	17	12
July 22nd to August 18th	9	11	17	16
August 19th to September 15th	6	17	17	20
September 16th to October 13th	9	20	22	23
October 14th to November 10th	1	17	17	22
Total	29	100	144	123

Just after this time the hen ceased laying, her abdomen began to enlarge, she could hardly walk, sat for long periods, adopted frequently the upright penguin attitude, while her comb and mucous membranes acquired a distinct bluish tinge. On palpation a marked fluctuating swelling could be felt and diagnosis of abdominal cyst was made. On November 22nd she was punctured by means of a small trocar in the posterior part of the abdomen, and a clear water-like fluid was obtained. This was collected in a measuring cylinder, and 775 c.c. was obtained. She was then allowed to go free in a run. She became more lively, and her comb became pink once more. She also ate readily.

On December 1st it was decided to tap off the remaining liquid in the cyst. This was done, and a further 250 c.c. of clear liquid was obtained.

On December 16th the fowl laid an egg once more, and again on December 18th. The fowl was then returned to the owner with the other three, and we have had no further word of her.

Translation

SOME CASES OF EPISTAXIS IN RACEHORSES.

By M. V. PARVULESCU,

*Veterinary Surgeon in the Roumanian Army.**

Among pure-bred English horses that run on the two race-courses at Bucharest (Roumania) some frequent cases of hæmorrhage from the nose have been noticed during the last two years—twelve cases out of 150 horses in 1924.

* *Revue Vétérinaire*, April, 1925.

The clinical picture is as follows: During galloping, sometimes even when cantering, whether racing or training, red blood appears at the nostrils, slightly frothy, blocking to a certain extent the nasal orifice, at times on one side only, but generally obstructing both nostrils. Sometimes there is only a small quantity, but more often a large amount which soils the chest and the anterior limbs, the rider, and leaves tracks on the course.

In some cases one sees only a thin reddish-brown thread in the inferior commissure of the nostril, which does not descend beyond it. The hæmorrhage ceases of its own accord a few minutes after the animal has come to the walk. The horse that bleeds from the nose is uneasy enough during the race even to drawing the attention of the jockey by his staggering, sometimes pulling himself up progressively in order to walk; but now and again the disturbance of the horse is unappreciable to the rider, who does not perceive the blood falling on the ground.

This respiratory distress is marked enough sometimes to cause the horse to lower his head and bend his neck, but disappears rapidly, and does not leave any trace once the horse is at rest and the hæmorrhage arrested. The incident is not repeated each time that the horse gallops, but quite often and without premonitory symptoms; moreover, although it is true generally that the horse that bleeds will bleed, yet exceptions exist.

We have seen the stallion "Nyl," for example, which bleeding several times in a period of three years, has not bled since—without any treatment.

The general condition is never influenced, and the animal continues training and racing on the morrow.

Where is the seat of these hæmorrhages? Does the blood come from the lungs? In our opinion no, because the general state is never influenced; one distinguishes cases where the hæmorrhage is unilateral; in tubed horses one does not see any blood coming through the tube: the bloody foam is not nearly as fine as that seen in hæmoptysis; we have never noticed a cough. For the same reasons the hæmorrhage concerned is not tracheal, nor laryngeal, nor pharyngeal.

We are of opinion that in all our cases the bleeding was nasal, from epistaxis.

Is the epistaxis symptomatic? May it be an early symptom of glanders? It cannot be so, for with us glanders has never been found in racehorses. These hæmorrhages are not brought about by the presence of nasal tumours, which would be accompanied by other symptoms.

Is the epistaxis idiopathic? Are there individuals whose systems are in a special state to be prone to the mishap? Are there hæmophilic horses? We doubt it, since in our cases no ascertainable abnormal symptoms have been discovered by ordinary clinical methods.

One cannot say that work or fleetness would be efficient causes, since we have observed cases in "stayers" as well as "flyers," in those that run all out and in those that are held in.

The state of training cannot be a cause, since the accident appears both in horses that are not yet fit and in horses that are in condition.

We cannot think that it is a hereditary defect, since the pure-bred English horses are bought for the most part in France or England, and few bred in Roumania: they are therefore of very varied origin. It is true that cases are most frequent during the months and days when the temperature is warm, but we have also seen cases in the autumn and during cool mornings at training.

We have not established a certain connection between the barometric state and cases of epistaxis.

Age has no influence: two-year-old bleed equally with old horses.

Can one suppose that feeding has any influence? We have found nothing to warrant this.

The feeding of racehorses in Roumania is very simple. It consists of hay, oats, linseed, clover and lucerne in the green state, carrots, wheat or rye straw, and a little maize. Nothing else is used. All these products are grown in the country, and are not submitted to any artificial culture or preparation; the soil does not receive any manure save animal dung.

It is for these reasons that we are of opinion that epistaxis as it exists at Bucharest is accidental, but unfortunately the cause is still elusive.*

Can epistaxis of the horse be cured? In our special cases it only presages fresh hæmorrhages. We have tried cold water effusions to the head, intranasal insufflations of cocaine, adrenalin, veratrin, or simply cold water; subcutaneous injections with solutions of adrenalin, veratrin, ergotin—all these were used just before each time of going out. They are awkward enough to carry out, and moreover of doubtful efficacy. We have tried also hemostyl, electrargol, and solutions of urotropin. The results were not decisive. We have also used a certain formula with a urotropine base in a single case, the

* Editor of *R.V.*: We have intimated to our distinguished collaborator that from different observations made in France, and others made by us personally, we believe that repeated epistaxis in racehorses may be ascribed to cardiac disturbances, which are quite frequent in these animals, and which represent one of the stages of strained or dilated heart.

horse has not bled since, but it is not at all certain that our injections have been beneficial.

This note has but one aim, that is, to state the problem in the hope that a solution will be forthcoming from some quarter.

The interest in the question is very great. The epistaxic is a lost horse. The owner sees the value of his "crack" decline from day to day by about 50 per cent. Not only is the animal cursed with a definite defect, but nobody can tell whether on such and such a day or in such a trial the horse will be able to finish the run.

[If the hæmorrhage is nasal, exploration of the nasal cavity with an electric torch might throw some light on the subject. The subsequent application of the thermocautery to any bleeding vessel might produce a cure. We have known of a few cases of epistaxis in the human subject cured in this way.—G. M.]

MEAT REGULATIONS.

THE Minister of Health, the Right Hon. Neville Chamberlain, M.P., has addressed the following letter to the Right Hon. The Lord Banbury of Southam and Sir Henry Cautley, Bart., K.C., M.P., who have consulted him as to certain provisions of the Public Health (Meat) Regulations, 1924, and the Rural District Councils (Slaughter-houses) Order, 1924 :—

"I have heard of your interest in the suggestion which has been widely made that the new Meat Regulations have the effect of prohibiting the occasional slaughter of animals at farms. As there seems to be rather a general misconception as to the effect of the Regulations I think it would be well to send you a full explanation.

"I have recently issued two documents relating to the slaughter of animals for human consumption, namely, The Public Health (Meat) Regulations, 1924, and the Rural District Councils (Slaughter-houses) Order, 1924. I enclose copies of both of these documents for your information.

"The Regulations, which are designed to give effect to certain of the recommendations of the Departmental Committee on Meat Inspection, do not impose any limitation as to the persons who may slaughter animals or as to the places at which animals may be slaughtered. What they do require is that where an animal is slaughtered for sale for human consumption notice must be given to the local authority and the carcass must be retained for a few hours to give the inspector an opportunity of inspecting it if the local

authority desire that this should be done. This is a very important provision for preventing traffic in diseased meat, inasmuch as inspection can only be satisfactorily carried out at the time of slaughter when all the organs are available for examination. I may point out, however, that this provision only applies where the meat is intended for sale and that the requirements as to the retention of a carcass does not apply in the case of a sheep, the danger of disease in sheep being relatively small.

" The effect of the Rural District Councils' Order is to put in force throughout the whole country the provisions of the Public Health Acts as to slaughterhouses which were already in force in all Urban and a good many Rural areas. The only section I need mention here is one which provides in effect that no place shall be used or occupied as a slaughterhouse which was not in such use and occupation at the date of commencement of the Order unless it is licensed by the local authority. Places which were so used before the date of the Order become automatically registered. The term ' slaughterhouse ' is defined as including any building or place used for slaughtering animals of any description for sale. This implies some sort of regular user, and I am advised that the occasional slaughter of a pig or sheep on a farm does not constitute the place of slaughter a ' slaughter-house.'

" I think you will agree on reading the Regulations and the Order that there is nothing in either of them which has the effect suggested in the newspaper cutting, and I am confident that local authorities generally will administer the Regulations in a common-sense manner.

" As this question has been raised in various parts of the country, I propose to publish this letter in the Press."

Abstracts of Current Literature

Slaughterhouse Reforms.—*The Medical Officer*, November, 1, 1924.

THE Model Abattoir Society, founded by the late Sir Benjamin Ward Richardson, aims at inducing the nation to insist on the erection of public abattoirs, so that the private slaughterhouse system generally may be abolished and also at introducing into all slaughtering places efficient inspection, improved sanitation, and the use of humane arrangements and appliances. In addition to the usual propaganda by means of lectures, pamphlets, leaflets, and the like, the Society uses opportunities as they arise for showing the practical possibility of improved modes of killing in a model abattoir and tries to induce

private butchers to use humane instruments. The provision of public slaughterhouses in this country has made very slow progress, and like many other municipal enterprises that were rapidly materialising before the war, many schemes for such provision were postponed in consequence of that disaster.

Public opinion is again being turned in the direction of reform, and although a great deal of leeway has to be made up, there is some evidence that the conditions existing in many parts of the country will not be permitted to continue. In three large towns there has been a very definite advance—in Liverpool, in Coventry, and in Newport, Monmouthshire. In the last named great progress has been made with a municipal scheme, land has been acquired and plans prepared, and, best of all, the sympathetic approval of the local butchers obtained; but at the last moment a few of these have taken up a position of opposition, not to the carrying out of any scheme, but to the locality chosen for it. Without pretending to any expert knowledge of the local circumstances, it would appear to an unbiased outsider that the corporation had made an excellent selection for the site of their abattoir. It adjoins the railway and the works could be carried out in conjunction with the very extensive alterations now being undertaken by the Great Western Railway Company. The driving of cattle through the streets of the town would be done away with, and there would be a considerable saving of time in the transport of cattle to the cattle market and slaughterhouse. We trust the Newport Corporation will not permit what appears on the surface to be mere factious opposition to delay the carrying out of an enterprise which has long been considered a necessity by the inhabitants of the town.

For the third year in succession the Model Abattoir Society has organised a lecture in memory of the founder. Sir William J. Collins delivered the first lecture, Sir Arthur Newsholme the second, and the third was given on 23rd of October by Dr. Chalmers Mitchell, F.R.S., secretary of the Zoological Society of London. At the Zoological Gardens, he said, it was necessary to provide meat for carnivorous and omnivorous animals and birds. Horses and goats were principally used for this purpose, and these were killed in a modern hygienic abattoir. About three horses were slaughtered in two days, and it was the custom to use a rifle for the purpose. He considered that all methods of electrocution known at present required too elaborate a preparation, upsetting to the animals and dangerous to the staff, and he had come to the conclusion that there was little or nothing to choose between the rifle and humane killer, the poleaxe and the knife, as the instruments of actual death, provided always they were skilfully used under

proper conditions. He believed, however, there were many opportunities for carelessness, ignorance, or inhumanity to inflict unnecessary suffering in the preliminaries to the final act, but that these opportunities were least in the case of the rifle, relatively small with the humane killer, definite and probably nearly equal in the case of the poleaxe and the knife. To reduce them to an absolute minimum there must be expert supervision in a large public abattoir. It is of interest to learn that Dr. Chalmers Mitchell's experience leads him to the conclusion that animals have no presentiment of death, and even that the fresh blood and warm offal of their fellows convey no message of fear to their consciousness. He believes, nevertheless, that they are readily thrown into panic by being driven into unfamiliar places and touched in unfamiliar ways by unfamiliar hands. He urged " that every abattoir should have attached to it stables or byres of a kind to which the animals were accustomed, and that they should be kept in these for at least some hours before being slaughtered, and be tended and finally led out by men familiar with the handling of living animals; there would then be the least chance of panic and therefore of accident in submitting them to the weapon employed."

There is one reform ready to the hands of the Model Abattoir Society which if achieved would go a long way towards accomplishing some of the objects of the Society. We refer to the anomalous position as regards the supervision of slaughterhouses and of slaughtering in rural districts. A rural district council has no statutory power to make by-laws with respect to slaughterhouses unless it obtains through the Minister of Health the statutory powers of an urban district. We believe those powers are always granted if application is made for them, but in the procedure required to secure them a considerable amount of trouble and expense is involved. The formal application for sanction must state the reasons for making it, the specific areas of the district to which it is to be applied, and certain other details. The urban powers having been secured, approval must be obtained for the adoption of by-laws; these must be specially printed in full and official advertisements must be inserted in the local newspapers. The personnel of many rural district councils is such that there is a reluctance to do anything that involves additional expense or appears to interfere with the so-called freedom of the individual, and public health officials at times have great difficulty in overcoming that reluctance. At the earliest opportunity the provisions in the Public Health Act, 1875, relating to slaughterhouses in urban districts should be made applicable to all rural districts, and not as at present only to those which have sufficient enterprise to apply for them.

Vevers, G. M., M.R.C.S., L.R.C.P.—Observations on the Genus "Paragonimus" Braun, 1899.—*The Journal of Helminthology*, vol. i, pp. 9–19.

Dr. Vevers in this interesting article confirms the view of Ward and Hirsch that the lung-fluke hitherto regarded as a single species actually comprises four distinct forms, which are to be differentiated mainly by the disposition and shape of their cuticular spines and the size of the eggs. These flukes all belong to the genus *Paragonimus*, and the species are not simply host varieties as they tend to overlap. The distribution of the four species is: *P. kellicotti* (Asia and America), *P. westermanii* (Asia), *P. compactus* (Asia), and *P. ringeri* (China and Japan).

Goodey, T., D.Sc., and Cameron, T. W. M., M.A., B.Sc., Ph.D., M.R.C.V.S.—Observations on the Morphology and Life-History of "Ascaris columnaris," a Nematode Parasite of the Skunk.—*Journal of Helminthology*, vol. i, pp. 1–8.

The skunk-breeding industry in this country is in its infancy, and there is considerable risk that it may become economically unsound, as skunks acquire heavy infections with a species of *Ascaris*, peculiar to that animal, which gravely affects their vitality and coats. The morphology and life-history of this species form the subject-matter of this paper. The life-history is shown to be on the same general lines as the ascarids of man and the domestic mammals. The larvæ hatched from the swallowed egg migrate through the liver and lungs, and reach the intestine by way of the trachea and œsophagus. These migrations caused a fatal pneumonia in mice, and are probably the cause of a similar disease in the skunk.

Arkwright, J. A.—The Position of "Rickettsia" as an Ætiological Factor in Disease.—*Journal Royal Army Medical Corps*, vol. xlii, 6, pp. 447–452, 1924. (*Review of Applied Mycology*, February, 1925.)

In connection with his investigations on typhus and trench fever, the author demonstrated the presence of *Rickettsia* bodies in lice (*Pediculus humanus*) infected with the virus of these diseases (*Parasitology*, vol. xv, p. 43, 1923). Woodcock takes the view, however, that these bodies are not independent micro-organisms, but merely constitute a stage in the breaking down of previously formed elements. In either case the association of each specific virus with a distinctive and recognisable form of *Rickettsia* in the louse is acknowledged.

The interpretation of the appearances encountered in normal and infected lice, and of the nature of the *Rickettsia* bodies observed,

does not depend, however, on the claim that these bodies are constantly associated with specific diseases. They cannot with any certainty be cultivated in artificial media, and their nature must be elucidated by other means than by culturing them. A strong argument in favour of the independent existence of *Rickettsia* as a micro-organism is furnished by Ledingham (*Lancet*, vol. i, p. 1264, 1920) in the demonstration that rabbits inoculated with the excreta of lice infected with trench fever virus develop agglutinins for *R. quintana*, whereas the excreta of normal lice do not cause the production of antibodies. Observations on the agglutination of *R. prowazeki* from infected lice by the serum of typhus fever patients were recorded by Otto and Dietrich in 1917, while Ricketts obtained analogous results with the similar bodies from infected ticks and the serum of patients suffering from Rocky Mountain fever.

Padmanabhan, C. V., G.M.V.C.—Cæsarean Section in the Cow.—*The Indian Veterinary Journal*, vol. i. No. 3, February 1925.

THE subject was a middle-aged cow. She showed labour pains and uneasiness for two days, and later she went off feed and the previously swollen udder shrank, so she was brought into the veterinary hospital on November 10, 1924, seven days after first being noticed ill. There was a foul-smelling discharge from the vagina and the animal was dull. On examination the fœtus was found to be dead and the presentation a transverse one. The fetlock and hoof of one hind limb were thrust deep behind the pelvic rim, and all attempts to move the fœtus and bring out at least one limb were unavailing. Cæsarean section was therefore decided on.

The animal was put under chloroform and operated on through the right flank, an incision about 12 inches in length obliquely downwards and backwards being made. All bleeding was stopped by ligaturing the big veins and artery forceps. On opening the uterine wall the edges of the cut ends were held up with both hands of an assistant to prevent the contents of the uterus falling into the abdominal cavity. The fœtus removed was swollen and putrefied.

The uterus was cleaned out as far as possible by sponging with a wet towel; a clean towel was put through the incision and taken out through the vagina, with a view to clean the vaginal cavity. The uterine walls, peritoneum, and abdominal muscles were sutured with continuous silk sutures, and the external skin with interrupted sutures; Tr. iodine, boric acid, a thick layer of collodion, and a thin layer of cotton-wool were applied to the wound, and the uterus douched out *per vaginam* with warm saline solution. The animal was put in a dry, clean place and cold water applied to the head,

which caused her to raise her head, and two hours afterwards she got up and was given rice conjee. Conjee with carbolic acid was the sole food given for three days. The animal did not move freely, and was mostly lying down for three days, and was as far as possible kept on her left side. Conjee was given as drenches, and the uterus daily irrigated with Condy's fluid. On the fourth day the temperature went up to 104°, but a big fever and stimulant draught reduced it. Eusol was subsequently used as an injection, and the sutures were removed on the ninth day. After seven days the cow began to eat greedily and some grass was given to her regularly. Conjee was given thrice a day, and the animal was discharged cured on November 21, 1924.

Reviews

Atlas der Anatomie des Pferdes. Part I. By Dr. Med. Vet. R. Schmaltz, Professor of Anatomy in the Veterinary High School of Berlin. Berlin: Verlagsbuchhandlung von Richard Schoetz. Price M. 16.50.

Part I of this well-known Atlas is now issued in the 4th and 5th edition, the revised edition of Part II, already reviewed in this Journal (Vol. 79, p. 216), having been issued earlier.

The first part of Schmaltz's Atlas was out of print in 1914, and for ten years has been unobtainable. The present edition is practically rewritten and greatly enlarged. Though the old numbering of the plates is retained, additional plates have been introduced and indicated by letters, e.g. 22a, 22b, giving the parts in greater detail, and the total number of plates is now 47 compared with the 24 of the earlier edition. This part includes the skeleton of the limbs and trunk, many of the plates of which are in colours and are beautifully reproduced. The cost of production must have been very great, and we cannot too highly praise the knowledge, industry, and skill of the author and his artist, Karl Hajek.

A Memoir of William and John Hunter. By George C. Peachey. Printed for the Author by W. Brendon & Sons, Ltd., Plymouth, 1924. Pp. viii. and 306.

This memoir, which may be truly described as a labour of love, gives the results of researches extending over thirty years. For the greater part of this time the author lived in an atmosphere of Hunter; Hunter's home, his London residences, classes, military services and period at St. George's Hospital, are all familiar to him. He has read his letters and handled his belongings. It is indeed impossible to construct a living portrait of an individual one has never seen by any other means than by saturating oneself in his surroundings, work, and correspondence, till one thinks his thoughts and responds to his hopes and aspirations.

The memoir consists of three parts: the history of anatomy in London up to 1746, when William Hunter began lecturing; a notice of the life and work of William Hunter; and a memoir of John Hunter.

The account of the early teachers of anatomy in London, and of their struggles, forms a brief and interesting prologue. It does not pretend to be complete, and is reconstructed mainly from the advertisements of schools of anatomy as found in the London newspapers—a laborious method of research. Few can realise the difficulties which, owing to popular prejudice, had at this time to be overcome in the study of anatomy. As the story is unfolded we see that before William Hunter began his work the foundations were well and truly laid. Through William, the elder brother, it was that John Hunter received his first instruction in anatomy.

There were public demonstrations of anatomy at Surgeons' Hall as opportunity offered, but until medical schools were established the real work was done in schools and classes held in private houses. Though anatomy was nominally the subject to which these lessons were devoted, surgery, bandaging, and midwifery frequently formed part of the tuition.

The author in his enthusiasm for the Hunter brothers is rather inclined to condone their attacks on other teachers. Neither was blessed with the best of tempers, and in the end a permanent estrangement occurred even between the two brothers over the old quarrel of priority of discovery.

It is, however, to the memoir of the immortal John Hunter that one turns with the greatest interest. Here the writer has discovered some new matter, and gives a detailed account of the quarrel with his colleagues at St. George's Hospital which directly led to his death. The memoir throughout shows a first-hand knowledge of John Hunter and his family; it briefly crystallises his life's work, and deals with incidents in his career either previously unknown or but little studied.

To William Clift is assigned the imperishable fame which is rightly his, as the enthusiastic assistant and faithful chronicler of his beloved master. Nothing is said which removes from Everard Home the stigma attached to him as the destroyer of the Hunter papers committed to his care.

Students of the history of medicine are indebted to Mr. Peachey for this further contribution to a great and attractive subject.—F.S.

Praktikum der Tierärztlichen Geburtshilfe (Practice of Veterinary Obstetrics), 3rd edition. By F. LINDHORST, D.V.M., DELMENHORST, and F. DRAHN, Professor at the Berlin Veterinary School. 1924. Pp. 210; 148 illustrations, 1 coloured plate. Berlin. Richard Schoetz, Wilhelmstrasse 10. Price 9 marks and 60 pfennigs.

This is an excellent book on obstetrics which has had a good circulation in Germany. Part I deals with parturition in the cow and mare, and Part II with the sheep, goat, and sow. The necessary instruments and their preparation, the hygiene of the deliverer and his subject, the abnormal and diseased conditions of the passage and the various presentations and methods of dealing with them, are described. The matter in the book being divided into numbered paragraphs makes reference easy. This is the first textbook on obstetrics in which we have read a description of dealing with a hind-end presentation, which tallies somewhat with the method advocated by E. P. Edwards, M.R.C.V.S., of Mold. Perhaps it is worth while giving the short extract in its entirety: "Cutis and muscles over the articulatio coxæ are cut through with the finger-knife,

possibly also the joint itself, but at any rate the capsule. A cord or hook is inserted into the coxo-femoral articulation, and the head of the femur torn from the acetabulum. A noose is then put over the femur and the extremity extracted without difficulty."

A special section deals with the most important principles of the mechanics of parturition, and in ten illustrations taken as a film the chief stages of spontaneous birth in the sheep are depicted. The get-up of the book is good, and in the hands of the critical reader it will awaken thought and be of good service.

Tierrärztliche Geburtskunde (Veterinary Obstetrics). By W. WITTMER of Hamburg, Berlin. Pp. 228; 67 illustrations. Richard Schoetz, 1925. Price 9 marks, 60 pfennigs.

This book contains a course of private lectures dealing with the physiology, pathology, and manipulation of parturition. The matter is set out in dispatch style and deals with the different domesticated animals. The chief part of the pathology section is given over to consideration of the mare and cow, but the sheep, goat, pig, and dog are also noticed. The figures in the text are easily understood and helpful. The advice given on post-parturition sequelæ is excellent. To any man who is studying for his final, or who wants to pass an advanced examination in obstetrics, the book will be very helpful. We need a handy manual like it in English.

Animal Parasites and Parasitic Diseases. Fourth Edition. Revised by B. F. KAUPP, B.S., M.S., D.V.M., North Carolina Experiment Station and State College. Demy 8vo, pp. xvi + 250. Plates 15, figures in text 81. London, Baillière, Tindall & Cox. Price 12s. 6d. net.

The information contained in this work is set out in four chapters, viz. Ectozoa, Entozoa, Protozoa, and 70 preserve insect parasites. Although the terminology appears somewhat out of date, each of the important parasites is considered under the following headings: synonym, distribution, description, animal and part infested, life-history, symptoms, and treatment. Some of the figures are of doubtful value. The work may be useful to the student, but is not full enough for the practitioner. The publishers' share in the book is satisfactory.

Preliminary Report of the Fly Survey of the Punjab, with special reference to Surra. By H. E. CROSS, M.R.C.V.S., etc., Lahore, 1923.

This report, of about eight pages, deals with a fly survey of the Punjab, from April 1921 till March 1924, in special reference to surra. The *Tabanidæ* naturally figure largely in the fauna, but unnamed species of *Chrysops* and *Hæmatopota* are mentioned. It is stated from experiments that certain tabanids (*T. albimedius* and *T. nemocallosus*) transmit surra directly, but that in the case of ticks of the germs *Ornithodorus*, which transmit it indirectly, there is probably a cyclical development of the trypanosome within the ticks. *Ocrossi* is stated to be new and to transmit the disease. Other species encountered were *Osayignyi*, *Olatorensis*, *Argas persicus*, *Hyalomma ægyptium*, *Rhipicephalus sanguineus*, *Margaropus annulatus*, *Hæmaphysalis sp.* ?, and *Dermacentor sp.* ?. It is stated that bot flies were very prevalent, and that a separate report on them

is being prepared. *Hypoderma lineatum* is the case of bovine warbles, but a new species, *H. crossi*, is responsible for the goat lesion, which is very common in the salt range tracks. The bot fly of the oorial (wild sheep) has been discovered and is being described. *Hippoboscidæ* are said to be very prevalent on cattle, camels, horses, and dogs, but only *Lipoptena caprina* of the goat is mentioned.

Lyperosia, Philæmatomyia Stomoxys, Phlebotomos, and "Mosquitoes" are mentioned, but not further specified. "Lice" on goats, sheep, buffaloes, and poultry are alluded to without the species having been determined. An account of new species of *Tabanidæ* is promised, 12 species of *Tabanus*, 2 of *Hypoderma*, the camel bot (? fly), and the sheep bot (? fly) are figured.

R.A.V.C. ANNUAL DINNER.

THE annual dinner of the Officers of the Royal Army Veterinary Corps will be held at the Hotel Cecil on Friday, June 19, 1925, at 8 p.m.

Officers of the Militia, Territorial Army, and Temporary Officers who served in the War are eligible to attend.

Subscription: subscribers, 15s.; non-subscribers, £1 10s. Will gentlemen desirous of attending kindly inform the Hon. Secretary, R.A.V.C. Dinner, Caxton House (West), Tothill Street, S.W. 1.

Personal

Mr. G. P. Male's hunter "Ruddy Weather" won the Adjacent Hunt Race at the Vine Hunt Point-to-Point Steeplechases held at Oxford Hill, Kingsclere, on the 13th of April.

Major P. J. Simpson, D.S.O., T.D., F.R.C.V.S., has been elected a Justice of the Peace for the County of Berkshire.

Erratum

As the author of the article in the April issue, entitled "A Warning Note on the Control of Tuberculosis and the Milk Supply," Professor Lyle Cummins is described as "*President*" of the King Edward VII Welsh National Memorial Association. This should read "Principal Medical Officer," as the President is Colonel David Davies, M.P.

NOTICES

All communications should be addressed to 8 Henrietta Street, Covent Garden, London, W.C. 2. Telephone: Gerrard 4646. Telegrams: "Baillière, Rand, London."

Letters for the JOURNAL, literary contributions, reports, notices, books for review, exchanges, new instruments or materials, and all matter for publication (except advertisements) should be addressed to the Editor.

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